

WHAT IS CLAIMED IS:

1. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
panel, said transmission structure comprising:

a housing including an upper casing and a lower casing, a
main circuit control board being received in the upper casing,
the upper and lower casings defining a layout space in which the
display panel and a transmission mechanism are movably received,
a base board being slidably disposed on the lower casing, a
transmission guide member being disposed on the base board for
guiding the transmission mechanism in sliding;

a display panel in which a liquid crystal unit is disposed,
one side of the display panel being drivingly pivotally connected
with the transmission mechanism; and

a transmission mechanism composed of several gear sets
mounted on a base seat, each gear set being directly or indirectly
controlled and driven by at least one motor to drivingly operate
multiple gears, one gear set being engaged with a gear disposed
in the display panel, whereby by means of rotation of the gear
set, the display panel can be swung forward downward or backward
upward, at least one gear set being movably assembled with the
guide member on the base board, whereby under control of the main
circuit control board, the motor can forward and backward operate
to simultaneously rotate the gear sets clockwise and
counterclockwise so as to extend the display panel out of the
housing or retract the display panel into the layout space of the

housing, after the display panel being extended out of the housing,
the main circuit controlling the motor of a gear set to
micro-rotate and make an opposite gear set rotate in the same
direction, whereby the display panel is swung leftward or
rightward.

2. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
panel as claimed in claim 1, wherein the upper casing is a case
defining a receiving space in which the main circuit control board
is disposed.

3. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
panel as claimed in claim 2, wherein a control panel is disposed
at one end of the receiving space and connected with the main
circuit board for a user to touch and control the functions of
the display panel.

4. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
panel as claimed in claim 1, wherein the transmission guide member
is composed of a rack and a guide channel.

5. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
panel as claimed in claim 1, wherein two sides of the base board
are formed with ribs on which slide blocks are disposed, two sides
of the lower casing being formed with slide channels
corresponding to the slide blocks, the slide blocks being movable

within the slide channels, whereby the base board can slide along the slide channels.

5 6. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
panel as claimed in claim 5, wherein two opposite hook bodies are
pivotaly disposed on lower side of base board and pulled by
resilient members to keep in an inward biased state, inner side
10 of each hook body being formed with a guide notch, the base board
being formed with guide slots corresponding to and overlapping
the guide notches, each guide slot having a close end and an open
end, the lower casing being formed with locating posts
respectively corresponding to the sliding positions of the guide
15 notches and guide slots, whereby when the base board is slid
and retracted into the housing, the close ends of the guide slots
abut against the locating posts to restrict the base board, and
reversely, when the base board is slid outward from the housing
and the open ends of the guide slots are moved to get close to
20 the locating posts, the guide notches of the hook bodies
instantaneously hook and locate the locating posts.

7. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display
25 panel as claimed in claim 6, wherein each hook body has a press
post, whereby by means of shifting the press posts in a direction
reverse to the hooking direction, the locating posts are released
from the hooking of the hook bodies.

30 8. Display panel transmission structure capable of
multidirectionally adjusting observation angle of the display

panel as claimed in claim 1, wherein two racks are disposed on the lower casing corresponding to the two racks of the base board, whereby the racks of the lower casing can extend out from the base board and overlap the racks thereof to cooperatively extend the travel.

9. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 1, wherein the bottom of the display panel is formed with multiple pivot holes, the transmission mechanism being pivotally connected at several pivot holes of the multiple pivot holes and gears being mounted at at least one of the pivot holes.

10. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 1, wherein the multiple gear sets of the transmission mechanism include a first, a second and a third gear sets.

11. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 1, wherein transmission mechanism includes a seat body composed of an upper casing and a lower casing, one side of the lower casing being provided with lugs corresponding to the pivot holes of the display panel, the lugs being respectively pivotally mounted in the pivot holes, whereby the display panel is pivotally connected with the transmission mechanism.

12. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 11, wherein two sides of the lower casing and the base board are respectively formed with corresponding slide blocks and channels, the slide blocks of the lower casing being slidably inlaid in the channels of the base board to serve as guide rails, the second gear set and third gear set meshing with the rack of the base board and the rack of the lower casing.
13. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 11, wherein the lower casing is provided with a back gear corresponding to the gear of the display panel, the back gear meshing with the gear of the display panel and being resiliently forced by a resilient body, whereby after the display panel extends out of the housing, the back gear makes the display panel naturally upward swing.
14. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 10, wherein on the lower casing of the seat body are disposed a first, a second and a third gear sets for driving the display panel to slide and extend or swing.
15. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 10, wherein the second gear set is disposed on a movable shell seat, a power source, a spiral gear and a driving gear being mounted on the movable shell seat, a shaft member being disposed on the lower casing for pivotally

connecting the movable shell seat with the lower casing.

16. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 15, wherein the driving gear of the second gear set downward extends out of the lower casing to mesh with the rack of the base board and the rack of the lower casing, the driving gear being driven by the power source to rotate along the racks so as to extend the display panel out of the housing or retract the display panel into the layout space of the housing.

17. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 10, wherein the third gear set is disposed on a movable shell seat, a power source, a spiral gear and a driving gear being mounted on the movable shell seat, a shaft member being disposed on the lower casing for pivotally connecting the movable shell seat with the lower casing.

18. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 17, wherein the driving gear of the third gear set downward extends out of the lower casing to mesh with the rack of the base board and the rack of the lower casing, the driving gear being driven by the power source to rotate along the racks so as to extend the display panel out of the housing or retract the display panel into the layout space of the housing.

19. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display

panel as claimed in claim 10, wherein a hooking notch is formed on the lower casing, whereby when the lower casing is moved out of the housing, the hooking notch hooks the press post of the hook body so that the base board is together driven to move outward.

5

10

15

20. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 10, wherein the first gear set is arranged in a space defined by a shell plate and the lower casing, the first gear set including a power source, a spiral gear, a main gear, a subsidiary gear, a driven gear, a first driven gear, a bevel gear, a second driven gear and a third driven gear, the spiral gear being fitted on the power source, the power generated by the power source being transmitted to sequentially drive the main gear, the subsidiary gear, the driven gear, the first driven gear, the bevel gear, the second driven gear and the third driven gear, the third driven gear extending out of the lower casing to engage with the gear of the display panel.

20

25

30

21. Display panel transmission structure capable of multidirectionally adjusting observation angle of the display panel as claimed in claim 20, wherein a sensing unit is disposed beside the first gear set, the sensing unit including multiple circuit elements, a first sensory gear, a movable plate and a second sensory gear, the movable plate being pivotally mounted on back face of the lower casing near the center thereof, the first sensory gear being engaged with the driven gear for sending the rotational signal of the driven gear to the circuit elements for the main circuit control board to take the data of rotational angle, the movable plate being provided with a projecting post,

a leaf spring and a toothed edge for meshing with the second sensory gear, whereby when the movable plate is swung, the second sensory gear detects the movement of the toothed edge and via the circuit elements sends the signal to the main circuit control board, the projecting post and the leaf spring being correspondingly slidably inlaid in the guide channel of the base board, a projecting post being disposed on the lower casing longitudinally corresponding to the projecting post of the movable plate and slidably inlaid in the guide channel of the base board.